



International Journal for Innovative Engineering and Management Research

A Peer Reviewed Open Access International Journal

www.ijiemr.org

COPY RIGHT



ELSEVIER
SSRN

2018 IJIEMR. Personal use of this material is permitted. Permission from IJIEMR must be obtained for all other uses, in any current or future media, including reprinting/republishing this material for advertising or promotional purposes, creating new collective works, for resale or redistribution to servers or lists, or reuse of any copyrighted component of this work in other works. No Reprint should be done to this paper, all copy right is authenticated to Paper Authors

IJIEMR Transactions, online available on 10th Dec 2018. Link

[:http://www.ijiemr.org/downloads.php?vol=Volume-07&issue=ISSUE-13](http://www.ijiemr.org/downloads.php?vol=Volume-07&issue=ISSUE-13)

Title: **FEASIBILITY STUDY OF FOUR LANE ROADS CONNECTION BETWEEN KHAMMAM TO WARANGAL HIGHWAY**

Volume 07, Issue 13, Pages: 57–65.

Paper Authors

YELAGANDULA.RAJITHA, B.KALPANA

Arjun College Of Technology & Sciences, Mount Opera Premises, Batasingaram (V), (M), Hayathnagar, Hyderabad, Telangana



USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per **UGC Guidelines** We Are Providing A Electronic Bar Code

FEASIBILITY STUDY OF FOUR LANE ROADS CONNECTION BETWEEN KHAMMAM TO WARANGAL HIGHWAY

¹YELAGANDULA.RAJITHA, ²B.KALPANA

¹(M.Tech)Transportation Department, Arjun College Of Technology & Sciences Mount Opera Premises, Batasingaram (V), (M), Hayathnagar, Hyderabad, Telangana

²Assistant professor, Arjun College Of Technology & Sciences Mount Opera Premises, Batasingaram (V), (M), Hayathnagar, Hyderabad, Telangana

Abstract:

Feasibility studies are normally conducted to justify investments the indispensable significance of attainability ponders in supporting choices identified with open spending on framework ventures, there are no endeavors to assess such investigations after development of offices. An investigation of a past achievability consider for a national interstate (563) path streets association and movement conditions The national highway development in India is carried out by a national highway authority of India (NHAI) .In India and in addition in the entire world transport framework assumes imperative job in the advancement of nation as a financial path and in alternate ways likewise, for example, improvement of farming and enterprises The national interstate (NH 563) improvement and actualized in India is 249 kms is add up to length. It takes from khammam to Warangal the improvement is going on NH563 and its getting to be 4 path streets. A few segments of NH563 thruways are finished by getting to be 4 path parkways yet some part are as yet the under development.The design procedures for flexible pavements based on C.B.R values. The asphalt configuration has joined by the code IRC: 37-2012 and Ministry of State Transportation (MOST) details. In this venture report, the asphalt layers, its endorsed confines by Ministry of State Transportation (MOST) and wellsprings of crude materials required for the laying of asphalt related with laying of 4 paths on National Highway (NH)- 563 between khammam to Warangal. The arrangement of interstate goes through plain landscape for 249 km by and large, the current street is on 0.5-2.5 m high dike aside from at ways to deal with significant extensions the current carriage width is 7.0 m with 1.5 m cleared shoulder at areas of settlements. These include 4 major bridges, 69 minor bridges and 210 culverts.

1.0 Introduction

Government of India has decided to take up through National Highways Authority of India (NHAI) about 1000Kms of expressways under of the National Highways Development Project (NHDP).

NHAI has decided to take up the Bangalore-Chennai Expressway project to facilitate high speed travel in this corridor. The existing National Highway-563 which is running parallel to the proposed turnpike

conveys one of the most noteworthy activity conveying passages in India. The proposed road office is to be produced as a completely get to controlled office on another arrangement. as advisors to carryout Consultancy Services for Feasibility Study cum Preliminary Design Report for the Khammam To Warangal way The proposed six path interstate would be a completely get to controlled fast office. Consequently all the passage, ways out and intersections must be arranged appropriately as review isolated offices. Wellbeing in outline, development, and task is of fundamental significance for the office and should be incorporated at the arranging stage itself. The Feasibility cum Preliminary Design Report in this way arranged will contain, between alia, the plan and format of the interstate and the undertaking office, primer outline and costing Advancement of harvest assortments strong to warmth, cool and water pressure including raiser seed generation

Environmental change is constantly connected with various medical problems. Subsequently access to better wellbeing foundation causes the populace to adjust to medical issues emerging out of the unfriendly impacts of environmental change. Accordingly, better the wellbeing framework and access to wellbeing, higher will be the Adaptive Capacity.

Feasibility Study:

The significance of an achievability ponder depends on authoritative want to "take care of business" before submitting assets, time, or spending plan. A possibility study may reveal new thoughts that could totally change a task's extension. It's best to make

these judgments ahead of time, as opposed to hop in and discovering that the venture just won't work. Directing a plausibility think about is constantly advantageous to the venture as it gives you and different partners a reasonable photo of the proposed venture.

Historical Traffic Growth of NH563

- Historical traffic count information along the Hwy 1 and Hwy 563 corridors within the study area was referenced from Alberta Transportation¹² in concert with a review of traffic counts
- In general over the last decade, the Hwy 1 corridor west of the Spring bank Road (RR-33) interchange exhibited a growth rate of 1.0-to-2.0 percent.

Objective of the study

- To study the research the important role in the development of NH563 highway
- To design a four lane highways to reduce the traffic flows.
- To develop easy, short and economic transportation system.

2.0 Literature Review

[1] Pandey, Y., Sangita, Kardam, R., and Singh, M. (2015) connected to Lochaber the much enhanced comprehension of frosty stream (that ice all at once goes about as a gooey liquid) that Alpine geologists had in the interim been creating. He made another and more exhaustive study of the Roads and different highlights, especially scratched bedrock surfaces, moraines and erratics, which empowered him to recreate previous ice sheets that could have dammed the

vanished "Loch Gloy", "Loch Roy" and "Loch Spean" in a mind boggling succession of stages that represented all classes of proof: Roads, flood cols, scratched bedrock, moraines and so on

[2] Chiou, Y.-C.; Lai, Y.-H (2008)the street system will be effectively blocked when a seismic tremor happens. Along these lines, it is important to think about the association dependability of the street organize hubs and to pass judgment on the key areas and improve the crisis therapeutic protect way trust that calamity readiness is viewed as the foundation of crisis administration. From the perspective of the entire nation, a nation needs to set up a national catastrophe counteractive action structure and an entire network debacle aversion framework.

[3] Islam M. Abo Elnaga (2014),A balanced temporary traffic control strategy can help meet the demands of the emergency rescue time and minimize the negative impact on society. The proposed PD-TCM model and relevant algorithms give full consideration to the optimization determination method of the emergency paths and control domain. To make full use of the road capacity and reduce the change in the network connectivity, a variety of control types with changeable control intensities are proposed, methods for the diverging domain to attract and distribute the traffic flow spillover from the control domain are used, and adjustments of the BPR function according to different road areas is improved.

[4] Kurauchi, F.; Iida, Y.; Shimada (2003) In a short period of time, rescue vehicles from all over the country began to quickly gather in the disaster area, causing a large

range of congestion. Of course, these measures played a great role in the earthquake relief and greatly reduced the losses from the earthquake, but inevitably produced some negative effects. At the same time, the normal order of life of the people in the non-earthquake area was also affected. For example, the fact that the rescue vehicles were occupying the driveway caused some people to bypass; this is a conflict between the public's right to travel and the limits of the emergency.

3.0 Methodology

Feasibility Studies Based on Data and information the project preparation support team (PPST) has examined feasibility of roads under the screening by assessing institutional capacity of APRDC, Alternative alignments,road safety and indigenous people and preliminary cost and budget. For institutional arrangements requirements, capacity building approach is adopted. Role of important stakeholders are identified. Existing roads have been examined in terms of congestion, geometry, and availability of Row and accordingly improvement proposals for like alternative alignments/bypasses and geometric improvements are made. Decisions taken during consultation, and suggestion of local engineers have been given due weightage. Consequently these socially acceptable improvement proposals have been shared with technical team to finalize design of the road. To understand impact of road improvement on road users and road side communities in terms of road safety. Secondary data support from (APSACS) and stakeholders' consultation have been given

importance. Elaborate consultations with various stakeholder groups have been carried out that helped to develop insight for building up strategy of intervention process

Hwy 563 Improvements

- Planned development and roadway improvements will, over time, result in Hwy 563 ceasing to function as a Provincial Highway corridor.
- It is considered prudent for the Province to have discussions with the County to affect the transfer of the Hwy 563 corridor to the local municipal jurisdictions in advance of the initial Hwy 1/RR-31 interchange improvements.
- This study suggests a future function and form for the various segments of the Hwy however most infrastructure requirements along the majority of the length of the corridor will, for the most part, be driven by adjacent development initiatives

Traffic Survey:

Manual traffic count surveys at appropriate locations in the project influence area were carried out. Comparison of traffic growth considered in the study and the actual number from the new counts is made to arrive at a conclusion on possible traffic growth over the design period. Vehicle traffic surveys were conducted on the project road that forms part of the route. Where the new road follows the alignment of existing paths, trails and tracks, then surveys were undertaken to determine all movements of pedestrians, animals, animal carts and vehicles. Traffic counts were

conducted for seven days of 12 hours. The consultant used standard traffic count format to conduct the counts.

ROUTE PLANNING:

- Arranging concerning street development assesses present and close employments of the transportation framework to fulfill
- Most extreme administration with at least money related and natural expense. The primary target of the underlying period of street arrange from khammam to Warangal roadway
- improvement is to build up particular objectives and remedies for street arrange advancement alongside the more broad area

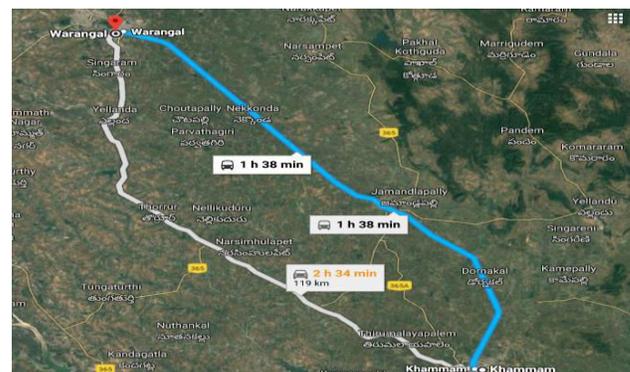


Figure: NH 563 Route planning

Cross fall in percentage for different Surface Types

Category of surface	Annual Low rainfall	Annual High rainfall
Bituminous	2.5 %	2.5 %
Cement Concrete	2.0 %	2.0 %

Metal/Gravel	2.5 %	3.0 %
Earth	4.0 %	5.0 %

Every new structure up to 60 m length will be built with a general width between peripheral appearances of the railings/parapets/crash boundaries equivalent to the roadway width of the methodologies. Every new structure are in excess of 60 m length will have least 7.5 m wide carriageway except if determined generally in Schedule-B of the Concession Agreement.

4.0 RESULTS

Roads into highways with pavements constructed from nearby regular stone bound with neighborhood raw petroleum. The slow advancement of the street organize has improved neighborhood assets and conditions inside tight spending limitations. Conventional tracks and transport courses were redesigned rapidly utilizing neighborhood building materials with little ventures to give the biggest conceivable system the nation over The standard strategies and particulars tend to propose advancement and materials, in any case troublesome and evacuate away they may be, which commonly result in higher cost of improvement. The normal subgrade, which is the most reduced layer of a street and can comprise of leftovers that have been left from old streets or might be the common soil that is uncovered for new street building

- The sub-base, which comprises of compacted rock, stone or sand and is the principal layer that the street developer puts down on the characteristic subgrade Basically,

this layer adds to the quality of the street, yet in addition gives a stage to working the hardware.

Geometric Overview of Existing Highway 563:

The design review of the existing Highway 563 corridor involved a desktop assessment and an evaluation of the corridor based on a site overview. The review of existing conditions served to identify the following geometric and access management issues:

Horizontal Alignment: A review of the geometry of the 12 horizontal curves along the existing Highway 563 alignment indicated that only 6 of the curves meet current highway standards³³.

Vertical Alignment: The Highway 563 corridor consists of 22 vertical curves (12 sag and 10 crest), with sag curves ranging from K19-to-K153 and crest curves in the range K13-to- K53. The Highway 563 grades vary from 0.0% to 7.2% (where a 6% grade is desirable for this highway facility). A comparison of these curves to the permitted Kmin values (required to

Highway 1/Highway 563 Interchange:

The interchange is characterized by: limited sight distance, lateral clearance legibility and traffic separation. There is severe sight limitation to the intersections at the ramp terminals;

- The interchange is not lit and in a rural area;
- The pavement is deteriorating and pavement markings are faint; and
- The low collision rate at the interchange is likely due to the low

number of users, curves and unconventional intersections.

Salient features of highway roads:

In India more than 4.25 million Km of road is available on the off chance that just some of them are built or repaired utilizing this procedure, there will be less waste plastic littered out and about. The procedure is eco-accommodating. Isolating plastic from the MSW at metropolitan yard includes use of assets, the expense of which keeps running into crores of rupees. Better obstruction towards rain water and water stagnation so no stripping and no potholes.

- Increment authoritative and better holding of the blend therefore decrease in pores in total and thus less rutting a raveling
- It fulfills the present need of expanded street transport.
- The expense of street development is additionally diminished and the upkeep cost is nearly nil.

Widening Geotechnical Issues of NH 563:

□ Excavation to accommodate a 3% or 4% grade along Highway 1 appears to be feasible with a uniform side slope of 3:1 alternately, a retaining wall structure could be considered if space restrictions for excavation are apparent.

- The surficial soils along Highway 1 generally consist of silty clay, silt to sandy clay tills. However, there may be some areas of weak silt, clay and/or organics that would require mitigation measures and stabilization. Bedrock may be encountered at shallow depths along Highway 1,

particularly near the crest of vertical curves.

The Republic of Building and maintaining infrastructure for observing traffic at the main intersections of Warangal city, two toll roads going from the city to the port, and a general road that runs parallel to the toll roads, collecting probe data and generation of traffic information, and offering traffic information.

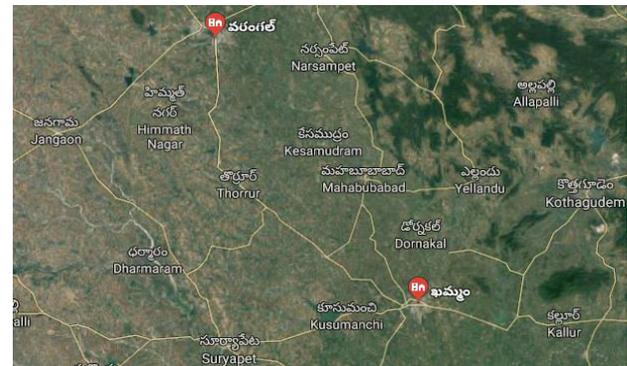


Figure: khammam to warangal highway

The Feasibility Study for Demonstration Project of International Energy Consumption Efficiency Technology and System “The present state analysis relating to the possibility of the introducing Intelligent Transport Systems (ITS) aiming at alleviating urban traffic congestion (Independent administrative agency New Energy and Industrial Technology Development Organization

Highway 563 Interchange: Planning

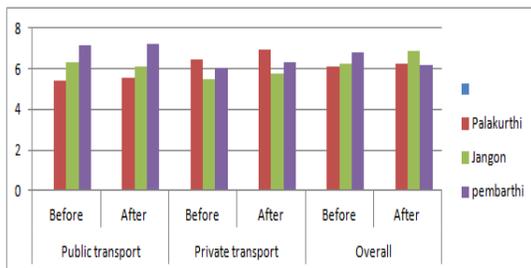
The "Roadway 1 Interchange FPS is planned to address "a definitive" prerequisites of the Highway 1 passage. This incorporates deciding the favored area and arrangement of another trade that will supplant the current Hwy 563/Old Banff Coach Road/RR-31 exchange. The accompanying segments give a rundown of the arranging

that was embraced to achieve the favored Highway 1 hallway and the favored trade area Development of highway especially 4 lanes divided carriageway of NH-563 projects in reducing the number of accidents

4-way junction survey:

Table 1 area percentage survey of 4 way roads from khammam to Warangal

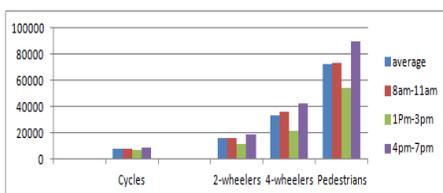
Area taken	Public transport		Private transport		Overall	
	Before	After	Before	After	Before	After
Palakurthi	5.42	5.56	6.45	6.95	6.12	6.23
Jangon	6.32	6.11	5.46	5.78	6.23	6.89
pembarthi	7.12	7.21	6.03	6.34	6.78	6.15



Graph: Percentage survey of 4 way roads from khammam to Warangal

Table 4 Way road asesement in Palakurthi region

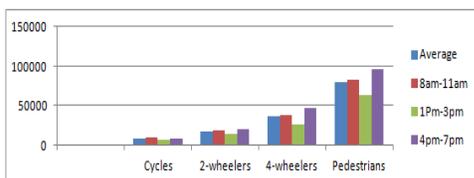
Parameters	Avg vehicles	8am-11am	1Pm-3pm	4pm-7pm
Cycles	7600	7386	6500	8956
2-wheelers	15618	16356	11524	18975
4-wheelers	33211	35689	21589	42356
Pedestrians	72567	73256	54689	89756



Graph: 4 Way road assessments in Palakurthi region

Table 4 Way road assessments in jangon region

Parameters	Average Vehicles	8am-11am	1Pm-3pm	4pm-7pm
Cycles	8416	9300	7500	8250
2-wheelers	17388	18456	13562	20147
4-wheelers	36994	38569	25892	46521
Pedestrians	80349	82147	63254	95647

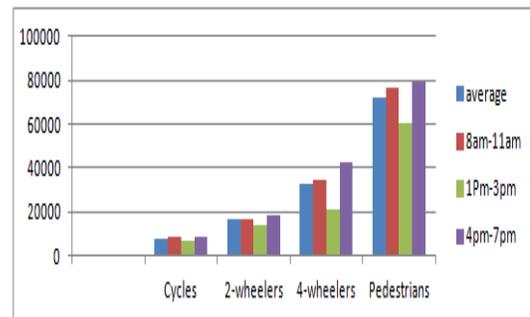


Graph: Way road assessments in jangon region

through the following developments. Improved crossing and alternatives access routes by use of signage, junctions, & alternate arrangement for local traffic circulation has been provided

Table: 4 Way road assessments in pembarthi region

Parameters	average vehicles	8am-11am	1Pm-3pm	4pm-7pm
Cycles	7946	8231	6812	8795
2-wheelers	16229	16586	13541	18562
4-wheelers	32689	34235	21478	42356
Pedestrians	71934	76475	60114	79214

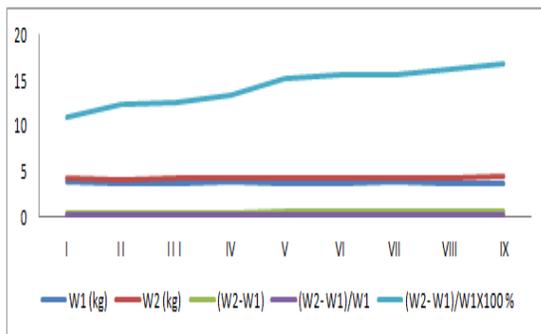


Graph: 4 Way road assessments in pembarthi region

Water absorption test:

Water absorption is used to determine the amount of water absorbed under determined conditions. The blocks to be tried ought to be dried in a stove at a temperature of 105 to 115o C till accomplishes constant weight cool the bricks to room temperature and weighed W1. Immerse completely dried and weighed W1 brick in clean water for 24 hrs at a temperature of 27±20 Degree Celsius. Remove the bricks and wipe out any traces of water and weigh immediately (W2). Water absorption in % by weight = $(W2 - W1/W1) \times 100$

$$\text{Water absorption} = (W2 - W1)/W1 \times 100 = [(4.18 - 3.75)/3.75] \times 100 = 11.46\%$$



Graph 3.4 :water absorption for optimal mix percentage variations

From the outcomes got water retention for ideal blend rate is 11.46 %.It is lesser then the standard estimation of 12%.And additionally saw that for greatest quality just a decent water ingestion acquired.

Plate Load Test:

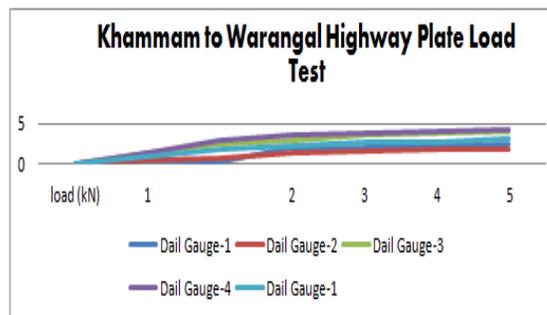
The plate load test can be used to measure the modulus of subgrade response for in situ material. The test includes squeezing a steel bearing plate into the surface to be estimated with a water driven jack. The subsequent surface avoidance is perused from dial micrometers close to the plate edge and the modulus of subgrade response is dictated by the accompanying condition:

$$\text{Aggregate Crushing Value} = 100 * (W2/W1) = (0.745/2.73) * 100 = 27.28 \%$$

Aggregate Crushing Value is 27.28 %.

Conclusions

The conclusions of Khammam to Warangal highway feasibility investigated that the communities and road transport sector will benefit directly, with significant increase expected in the level of passenger transport services; and, growth in the transport of goods by roads by small-scale transporters and other private car. The benefit of proposed widening of NH- 563 Development lead to changes in the level of



Graph: Khammam to Warangal Highway Plate Load Test

Aggregate crushing test:

Aggregate crushing value test on coarse totals gives a relative proportion of the opposition of a total pulverizing under step by step connected compressive load. Coarse total pounding esteem is the rate by weight of the pulverized material got when test totals are subjected to a predetermined load under institutionalized conditions.

Total wt. of dry aggregate (W1) kgs	Wt. of fines passing 2.36mm sieve (W2) kgs	Aggregate Crushing Value %
2.73	0.745	27.28%

well- being and human development, through their benefit of consumption level, educational attainments The data presented enhances the clear approach on 4 lane road construction on khammam and Warangal highway. "The proposed passage does not have a critical unfavorable effect on the security and task of the Interstate office in view of an investigation of present and future movement. the operational examination for existing conditions will,



particularly in urbanized regions, consolidate an examination of territories of Interstate to and including at any rate the essential exchange on either side. The review information was deliberately broke down to discover the rate offer of various vehicle composes, bearing savvy conveyance and morning and night top hour movement volume. The outcomes would be exceptionally helpful to activity police specialists to recognize appropriate movement control measures and actualize it.

7, Issue 4, July-August 2016, pp. 406– 421

REFERENCES:

1. Pandey, Y., Sangita, Kardam, R., and Singh, M. (2015) Laboratory Study for Use of Alternate Coal Mixed Waste Aggregates opposite Natural Aggregates for Bituminous Concrete Layer. *Worldwide Journal of Emerging Technology and Advanced Engineering*, 5(5), 401-403
2. Chiou, Y.-C.; Lai, Y.-H (2008) IIT Kharagpur, "Auxiliary Behavior of Cast Situ Concrete Block Pavement", *Journal of Transportation Engineering*, Vol.131, Issue 9, pp.662-668
3. Islam M. Abo Elnaga (2014), Development of Traffic Accidents Prediction Models at Rural Highways in Egypt. *Global Journal of Civil Engineering and Technology*, 5(6), 2014, pp.16– 24
4. Kurauchi, F.; Iida, Y.; Shimada (2003) An investigation of Detailed Project Report for Up degree of Nh-3 from Two to Four Lane", *International Journal of Engineering Development and Research Volume*